The Virtual Hospital: An IAIMS on the Internet Focused on Education via Integration of Continuing Education into the Workflow

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The Integrated Academic Information Management System (IAIMS) vision encompasses the creation of a system that employs a single user interface on a single machine to support a health care provider's daily information needs in the areas of patient care, education, research, and administration. A number of institutions have been working on projects in pursuit of this vision, using unique approaches, over the last decade.

When the IAIMS program commenced a decade ago, software and hardware standards for computer networking and systems integration were in their infancy. This made the task of networking together the varied computers in an institution and providing a unified, coherent user interface to them a daunting one, and therefore consumed much of the effort in the first generation IAIMS projects. In addition, a decade ago, there was little in the way of health sciences educational material available on-line. The result was that the first generation of IAIMS consisted of custom built solutions integrating their institutions patient care, research, and administrative computers, but with a relative lack of educational material on-line.

In the last decade, open standards for computer networking and systems integration have arisen, most notably the Internet. As our institution began planning recently for an IAIMS, it was assumed that commercially available software tools could provide us with a single user interface on a single machine to support a health care provider's daily information needs from the disparate computers in our institution, all of which are hosts on the Internet.

The Virtual Hospital is a second generation IAIMS constructed upon three well established Internet software standards - the World Wide Web (WWW) for information organization, Wide Area Information Servers (WAIS) for information searching, and Mosaic for information display. The Virtual Hospital's Uniform Resource Locator (URL) is http://vh.radiology.uiowa.edu.

The Virtual Hospital IAIMS integrates:
• Informm hospital information system services including clinical and administrative information
• Hardin Library services including OASIS on-line card catalog, MEDLINE, and on-line journals
• Virtual Hospital digital library of health science information for health care providers including decision support tools such as multimedia textbooks, teaching files, patient simulations, clinical practice guidelines, and diagnostic algorithms as well as lectures and conferences
• Iowa Health Book digital library of consumer health information for patients

Since connectivity and integration are now essentially off-the-shelf solutions, we have chosen to focus our IAIMS research effort and emphasis on encompassing and integrating the area of education into our IAIMS. This will be done in a two step approach. The first step is to place on-line and make available in the IAIMS a large number of health sciences educational tools. The second, and more difficult step will be to completely integrate these educational tools into the IAIMS in order to allow us to fulfill our ultimate goal which is to integrate the awarding of Continuing Education (CE) into the daily workflow of health care providers as they use the IAIMS.

The dominant paradigm of CE, the centralized lecture separated from the clinical encounter, is an inefficient and ineffective learning technique. To make CE efficient it should be delivered in a decentralized manner at the health care provider's convenience, and to make it effective is should be delivered in the setting of a real clinical context. Health care providers are always "in-training." This continuum of learning requires a continuum of information support and this is the intention of the Virtual Hospital IAIMS.

Reference

Galvin JR, D'Alessandro MP, Erkonen WE, Knutson TA, Lacey DL. The Virtual Hospital: A New Paradigm for Lifelong Learning in Radiology. Radiographics 1994; 14:875-879.